

## **11.7 MULTIMETERS**

### **11.7.1 Horiba Water Quality Checker U-10**

The U-10 Water Quality Checker is an instrument for simultaneous multiparameter measurement of water quality. The Horiba U-10 measures six different parameters of water samples: pH, conductivity, turbidity, dissolved oxygen, temperature, and salinity.

The U-10 is relatively compact and easily transported. Measurements are taken simply by immersing the probe right into the water sample. The U-10 can store up to 20 data sets in memory.

The U-10 is easily calibrated using standard pH 4.0 buffer. Using the Auto-calibration procedure, the instrument automatically calibrates pH, conductivity, dissolved oxygen (atmosphere), and turbidity. If more accuracy is desired, a two-point calibration can be performed.

The U-10 auto-calibration accuracy appears to be good for conductivity (5%). The pH tends to drift on low conductivity samples (<300umhos/cm) and has a 0.5 pH units accuracy. For higher conductivity waters, the pH has an accuracy of 0.1 pH units. Dissolved oxygen has an accuracy of about 2ppm and has a tendency to drift. The dissolved oxygen reading is sensitive to significant changes in the temperature and/or atmospheric pressure that may occur while transporting the meter in a vehicle. In addition, the dissolved oxygen must be corrected for altitude because the U-10 was originally calibrated at sea-level. The correction factors are found on the graph below. To reduce drifting, the dissolved oxygen meter must be allowed to equilibrate to its environment before taking a reading. The turbidity reading is the least accurate of the tests and shall only be used to compare one site from another.

REFERENCE                      Instruction Manual/Altitude Correction

Section No. 11.0  
Revision No. 0  
Date: 4/1/95

### 11.7.2 Hydrolab Scout 2

The Hydrolab Scout has a multiprobe capable of measuring temperature, pH, dissolved oxygen, conductivity, salinity, depth, and redox potential. The multimeter has a 100 meter cable attaching the multiprobe to the Scout 2 Display unit. The Hydrolab Scout 2 is most useful when rapid collection of data from a lake or deep river environment is desired.

The Hydrolab Scout can also be programmed to record water quality readings unattended in a stationary environment at preset time intervals. However, this is not recommended by the DEQ due to potential theft, vandalism, or catastrophes. The replacement cost of the Hydrolab Scout and multiprobe exceeds \$6000.

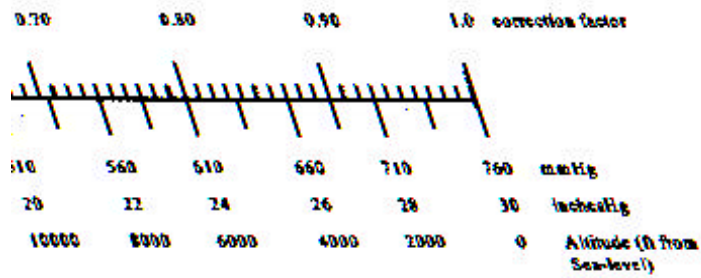
If calibrated correctly the Hydrolab field multimeter can have a precision and accuracy similar to that of laboratory pH, conductivity, and oxygen meters.

REFERENCE                      Instruction Manuals  
PROJECT                         Clean Lakes

Section No. 11.0  
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Section No. 11.0  
Revision No. 0  
Date: 9/28/98

#### Oxygen Correction Factor



Instruction Manual/Altitude Correction

#### Dissolved



REFERENCE

Section No. 11.0  
Revision No. 0  
Date: 4/1/95